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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,918	08/02/2000	Juliet C. Kraal	200-0646	7908

7590

03/22/2004

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EXAMINER

STEVENS, THOMAS H

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/630,918

Applicant(s)

KRAAL ET AL.

Examiner

Thomas H. Stevens

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2000 and 06 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/06/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 have been presented for examination. The examiner acknowledges amended claims 1-7.
2. The applicant is reminded to insert the provisional application number, located on page one of the specification.

Response to Amendments

3. The applicants are thanked for correcting the abstract and the drawings (pg. 8, lines 1-18).

Response to Rejections (103 Rejections (pgs. 8-15))

4. Regarding applicants' response to 35 U.S.C. 103(a) rejections: Applicants' arguments filed on January 6, 2004 have been fully considered and are persuasive, **based on the previous prior art used in the rejection**. The applicants' are correct in stating Socks et al. (U.S. Patent 5,831,584) does not disclose a virtual human immersed within the vehicle (pg. 9, lines 17-19). Additionally, the applicants' state Walker et al. (U.S. Patent 5,963,891) doesn't teach the growing or changing the appearance of a virtual human within a virtual environment (pg. 14, lines 9-15). Based on those previous facts the rejection, based on art used, are withdrawn; however **new rejections** accompany this action.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 8-13,15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by RAMSIS (Human Solutions Inc. (1997)).

RAMSIS is a 3D CAD ergonomics tool, which is designed to aid the German automotive industry for the development of vehicles and cockpits.

Claim 8: A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality (pg. 4, first paragraph) said method comprising the steps of: preparing an evaluator of a vehicle design for immersion as a virtual human in the virtual environment, wherein the virtual environment is created within a computer system and includes the vehicle design; determining a scale ratio for the evaluator, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population; preparing an adjustable property using the vehicle design (pgs. 1 and 2, Anthropometric Data Base section) and the scale ratio; growing the virtual human within the virtual environment to virtually represent a scaled evaluator; aligning the virtual human in the virtual environment with the evaluator and the property, performing the evaluation of the

vehicle design by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle.

Claim 9: A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of measuring an anthropometric dimension of the evaluator (pgs. 1 and 2, Anthropometric Data Base section).

Claim 10: A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of positioning a motion capture system on the evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system (pg. 4, Motion Tracking), so that the motion of the evaluator controls the motion of the virtual human in the virtual environment.

Claim 11: A method as set forth in claim 8 wherein said step of preparing an evaluator includes providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system (pg. 3, Available Platforms), for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

Claim 12: A method as set forth in claim 8 wherein the step of preparing an adjustable property includes the step of determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine

adjustability of the property (pgs.1 and 2, Anthropometric Data Base; pg.3, Achievability Analysis).

Claim 13: A method as set forth in claim 8 including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation (pg. 4, Visual Feedback).

Claim 15: A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an adjustable property to represent the vehicle design; measuring the evaluator; positioning a full-body motion capture system on an evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to a computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment ; providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system (pgs.1 and 2, Anthropometric Data Base; pg.3, Achievability Analysis), for providing the evaluator a view of the virtual environment while evaluating the vehicle design determining a scale ratio for the evaluator wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population; adjusting the property using the scale ratio for the evaluator; growing the virtual human in the virtual environment using the measurements of the evaluator and the scale ratio to virtually represent a scaled evaluator; aligning the virtual human in the virtual

environment to the evaluator and the property; performing the evaluation of the vehicle design by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle (pg.1 first paragraph; pg. 4, Application and Customers).

Claim 16: A method as set forth in claim 15, including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation (pgs.1 and 2: Anthropometric Data Base, Health and Comfort Analysis; and 4, feedback).

Claim 17: A method as set forth in claim 16 including the step of determining whether to use a new evaluator and using a new evaluator if determined to use a new evaluator (pgs.1 and 2: Anthropometric Data Base, Health and Comfort Analysis; and 4, feedback).

Claim 18: A method as set forth in claim 17 including the step of determining whether to revise the scale ratio if determined not to use a new evaluator and revising the scale ratio if determined to revise the scale ratio (pgs.1 and 2: Anthropometric Data Base, Health and Comfort Analysis; and 4, feedback).

Claim Rejections - 35 USC § 103

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-7, 14, 19 and 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over RAMSIS (Human Solutions (1997)), in view of Purschke et al. ("Virtual Reality-New Methods for Improving and Accelerating the Development Process in Vehicle Styling and Design" (1998)).

RAMSIS is a 3D CAD ergonomics tool, which is designed incorporation with the German automotive industry for the development of vehicles and cockpits; but it doesn't teach virtual reality automotive design simulation via a CyberGlove, and multiple sensors.

Purschke et al. teaches methods of improving car interior design via virtual reality by way of multiple monitors as well as by a CyberGlove.

It would have been obvious at the time of invention to one of ordinary skill in the art to modify the teachings of RAMSIS in view of Purschke et al. since the addition of

multiple sensors with the CyberGlove is advantageous to ergonomic design and analysis of vehicle interiors.

Claim 1: A system for subjective evaluation of a vehicle design within a virtual environment using virtual reality comprising: a scaleable physical property representative of the vehicle design, wherein the physical property (RAMSIS: pg. 3, achievability section) adjusted according to a scale ratio for an evaluator of the vehicle design; a computer system (Purschke: pg. 3, right column, second paragraph) for digitally creating a virtual environment having a virtual human (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) immersed within the virtual environment (Purschke: pg. 9, figure 12), wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator; a motion capture system for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; and a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

Claim 2: The system of claim 1 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the motions capture system includes an instrumented glove (Purschke: pg. 4, left column, second paragraph) worn by the evaluator for sensing motion of the evaluator's hand.

Claim 3: The system of claim 1(RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the motion capture system includes magnetic spatial tracking sensors (Purschke: pg. 11, left column, line 26) located on the evaluator for sensing motion of the evaluator's full body.

Claim 4: The system of claim 1 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the virtual reality display mechanism includes a head mounted display mechanism worn by the evaluator (Purschke pg. 11, left column, line 26) for seeing the virtual environment through an eye of the virtual human.

Claim 5: The system of claim 1(RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the computer system includes at least one video terminal displaying a view of the virtual environment as seen through an eye of the virtual human (Purschke: pg. 9, figure 13).

Claim 6: The system of claim 1(RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the computer system includes at least one video terminal displaying a third person view of the virtual human immersed within the virtual environment (Purschke: pg. 9, section 3.1).

Claim 7: A system as set forth in claim 1(RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section), wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population (Purschke: pg. 9, sections 3.1 and 3.1).

Claim 14: A method as set forth in claim 8 wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system (RAMSIS: pg. 4, figures 1 and 2); creating a virtual human digitally to represent the evaluator using the digital motion capture sensor locations for the virtual human the evaluator's measurements (RAMSIS: pg. 4, figure 3) and the scale ratio; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator (Purschke: pg. 11, left column, line 26); and checking that the motion of the virtual human mirrors the motion of the evaluator.

Claim 19: A method as set forth in claim 15 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein said step of growing the virtual human includes the steps of; assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system; creating a virtual human digitally using the motion capture sensor locations for the virtual human and the scaled measurements of

the evaluator; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator (Purschke: pg. 11, left column, line 26); and checking that the motion of the virtual human mirrors the motion of the evaluator.

Claim 20: A method as set forth in claim 15 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section), including the step of determining a scale ratio range for a member of a target population represented in the evaluation (Purschke: pg. 9, left column, 3.1, lines 5-6) and using the scale ratio range to determine adjustability of the property.

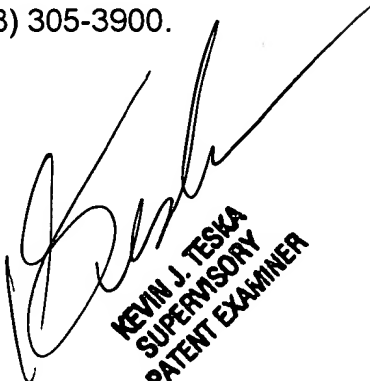
Correspondence Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:30 am- 5:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704. The fax number for the group is 703-872-9306.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

March 12, 2004

THS


KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER